

ABSTRACT

1 A surface micromachining process for the fabrication of
2 three-dimensional micro-hinges directly on silicon on
3 insulator wafers. The process includes the steps of (a)
4 defining openings around the surface of a desired hinge
5 pin in a single layer of a silicon single crystal; (b)
6 subjecting the openings to an etching process for removal
7 of oxide material that is located in contiguous relation
8 to the openings under the area of a hinge; (c) growing
9 thermal oxide to define a gap between the hinge pin and a
10 subsequently deposited polysilicon cap; (d) immediately
11 depositing a thin layer of a chemical vapor deposited
12 oxide sufficient to cover fine gaps not completely
13 covered by the thermal oxide; depositing polysilicon and
14 etching to define a hinge cap; and further etching to
15 allow a mirror to be lifted out of the silicon wafer.

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